

means of which we should be enabled better to understand both the past and the future, and to judge more clearly of the present.

The important bearing which the work at the Naples and similar stations had on the elucidation of this law was then pointed out. "Every fish, every crab, every Medusa is the result of a long process of development, which we have to trace, and the determination of which the Zoological Station is intended to facilitate. That is its purpose; it was for that end that I built it, and for that reason I have asked you to lend your support to my efforts."

THE "VILLE DE CALAIS" BALLOON ASCENT

PARIS, May 3.

WE made our ascent yesterday from La Villette gas-works at 1.25 P.M., and landed safely in a field at Creney, a small country place four miles south-east of Troyes, which is about 100 miles south-east from Paris. After having made observations during a little less than six hours, our grapnel was let down at ten minutes past seven. There were three of us in the car—M. Duruof, Mr. Marriott, an English correspondent in Paris, and myself. The maximum altitude reached was about 12,000 feet. The ascent was very gradual, and the above height was reached only at six o'clock. No sensible effect was perceived, although the temperature of the air, which on the ground was about 50° F., was no more than 26° at this altitude. We tried several experiments, with what success it remains to determine on examination of the apparatus. Some of the results, however, I am able to state here.

We had suspended to the net a number of cages containing small birds and guinea-pigs. The current of gas had a decided inclination to flow in a certain direction, and we had not ascended 6,000 feet when one of the birds was found dead by suffocation. It was the only bird exposed to the inhalation of the current of gas, and no other was injured. It was proved by a careful autopsy executed this morning by Dr. Lionville that this bird had perished by intra-osseous hæmorrhage in the cranium. The hæmorrhage had taken place on both sides, and without any lesion appearing to the exterior.

We discovered that not less than four different banks of clouds were being carried over Paris and its vicinity. Before the end of our journey the clouds had considerably diminished in thickness, and the blue sky appeared. I was able to take some thermo-solar observations with a blackened bulb thermometer *in vacuo*.

As the effect on our constitutions of our 12,000 feet trip was very trifling, I am of opinion that the experiment may be scientifically conducted gradually to an immense altitude, independently of previous catastrophes.

W. DE FONVIELLE

NOTES

As we announced some months ago (Dec. 24, vol. xi. p. 153), Prof. Huxley is to undertake the duties of Prof. Wyville Thomson's chair of Natural History in the University of Edinburgh during the present summer session. Prof. Huxley gave his introductory lecture on Monday afternoon to a large audience. He was accompanied by Principal Sir Alexander Grant, Principal Tulloch, St. Andrews, and the members of the Senatus, and was enthusiastically received. He expressed at the outset a hope that at this time next year Prof. Thomson would be among them again, full of health and vigour, laden with the spoils of the many climes through which he had travelled, and a sort of zoological Ulysses, full of wisdom for their benefit. He then took a general view of his subject, put before the class

the considerations which resulted from the careful study of a single animal, the Crocodile; an animal which was worthy of attentive study, as it might be said that a knowledge of its organisation was the key to the understanding of a vast number of extinct reptiles, and the key to the organisation of birds; while it helped them to connect the higher with the lower forms of vertebrate life, and was, in part at any rate, the key to the history of past life upon the globe. There might be asked respecting this animal, as respecting every other living thing—first, what was its structure? second, what did it do? third, where was it found? and fourth, in virtue of what chain of causation had this thing come into being?—this last having only been recently recognised as one of those questions which might legitimately be put. He then proceeded to describe the organisation of the Crocodile—its morphology, physiology, and distribution; and remarked that there were few animals about the palæontological history of which they knew so much, as they could carry back its history through the tertiary and secondary epochs. The answer to the last question constituted *Ætiology*, or the science of the causes of the phenomena of morphology, physiology, and distribution. Here, as in all cases where they had to deal with causation, they left the region of objective fact and entered that of speculation. With their present imperfect knowledge, the only safe thing they could do in attempting to form even a conception of the cause of this extraordinary complex phenomenon was what a wise historian would do—stick by archaeological facts. He pointed out that palæontological facts showed that there had been a succession of forms of that animal to the present day, the oldest being something like the Lizard.

THE Instructions prepared for the use of the officers of the Arctic Expedition in their Scientific work are now nearly complete, and all the courses of instruction, comprising the use of magnetical, astronomical, and meteorological instruments and of spectroscopes, will be concluded next week, many officers from both ships having taken part in them. We believe that the present arrangement as to date of leaving, the 29th instant, may be considered as final. We have already stated that the exploring ships are to be accompanied as far as Disco Island by the *Valorous* for the purpose of enabling them to fill up with stores and coal at the last moment. At the suggestion of the Council of the Royal Society, advantage will be taken of the presence of this ship to make observations in a little explored region, her homeward voyage being employed in carrying out such a physical and biological exploration of the southern part of Baffin's Bay and the North Atlantic between Cape Farewell and the British Isles as may serve to complete the work which is being so successfully prosecuted in other seas by the *Challenger*. Mr. J. Gwyn Jeffreys, the coadjutor of Dr. Carpenter and Prof. Wyville Thomson in the *Porcupine* expeditions, which first demonstrated the feasibility and scientific importance of this kind of exploration, has volunteered for the service, and he will take with him as his assistant Mr. P. Herbert Carpenter, who did good work when accompanying his father in the *Porcupine*, and who will especially take charge of the physical inquiries.

M. CORNU's lecture on the velocity of Light at the Royal Institution to-morrow evening is looked forward to with great interest. We believe he intends to speak in French, though his knowledge of English renders him quite competent to make use of that language if he chose. An account of the results attained by M. Cornu will be found in *NATURE*, vol. xi. p. 274.

HOFRATH HEINRICH SCHWABE died at Dessau on April 11; he reached a patriarchal age, having been born on Oct. 25, 1789, at Dessau. He retained his faculties to the last, although he had been compelled for many years to relinquish his favourite astronomical studies, which in 1857 had won for him the Royal Astronomical Society's Gold Medal.

CHEMISTRY in Germany and in Austria has to deplore two severe losses. On the 15th of April died Prof. von Schrötter, Master of the Mint in Vienna, and known best through his discovery of amorphous phosphorus and his determination of the atomic weight of phosphorus; he died at the age of seventy-three years. A few days later Prof. Carius died at Marburg after a protracted illness. Although only forty-six years old, he leaves behind him the record of very numerous researches, of which those on the sulpho compounds, corresponding to glycerine and its derivatives, on the oxysulphides of phosphorus, on the action of hypochlorous acid on hydrocarbons, and on the analyses of organic chlorides, iodides, bromides, sulphides, and phosphides are best known.

THE *Times* of the 30th ult. contains a letter from its correspondent with the *Challenger*, dated "Zamboango, Jan. 31." The *Challenger* left Hong Kong on Jan. 6, and proceeded to the middle of the China Sea, where a series of temperature soundings was taken, the temperature at the bottom, 1,200 fathoms, being found to be 36° Fahr. This temperature is accounted for by Capt. Chimmo's statement, that the China Sea is cut off by a barrier, which rises to a height of between 800 and 900 fathoms below the surface of the water, from communication with the Antarctic Ocean. Passing along the west coast of Luzon, the *Challenger* entered a little enclosed sea extending from the north point of the island of Tablas to the strait between the north-east angle of Panay and the south-west point of Masbate. Here another series of interesting temperature soundings was taken, the temperature at bottom, 700 fathoms, being 51.7°. The temperatures generally in this Panay Sea were to a certain extent intermediate between those in the China Sea on the one side and the Zebu Sea on the other, leaving it uncertain whether the cleft in the barrier to the depth of 150 fathoms is between Tablas and Panay or between Romplon and Sabuyan. After visiting Zebu, near which some fine specimens of the beautiful sponge the "Venus' Flower-basket" (*Euplectella*) were trawled, the ship made for the small island of Comiguin, between Mindanao and Bohol, to inspect the active volcano therein. This volcano "was born on May 1, 1871," and now forms an irregular cone of 1,950 feet in height. From Comiguin the *Challenger* proceeded along the west coast of Mindanao to Zamboango, where a party of sportsmen were sent to camp out in the forest within riding distance of the ship. On leaving Zamboango, a run of about 2,000 miles was to be made nearly parallel with the equator, and only a few degrees to the north of Greenwich Island. Thence the expedition was to make one of the most important sections, through the Caroline and Ladrone Islands to Japan, where it was expected to arrive about the second week of April.

THE enterprise of the Scottish Meteorological Society we have had frequent occasion to refer to, and the practical as well as scientific value of the work it undertakes does it the greatest credit, especially when its narrow means are taken into consideration. One of its latest publications is a diagram by Mr. G. Thomson, Fishery Officer, Lybster, Caithness, showing for the months of July, August, and September, 1874, the catch and quality of the herrings, and the varying positions of the herring-ground in the district of Lybster, as also the meteorology of the district. The diagram, which has been revised by the secretary, Mr. Buchan, is ingeniously constructed and quite intelligible. There are two series of conjoined curves and tables, the first showing all details belonging to the meteorology of each day, and the second showing the catch and quality of fish. Underneath are a sketch of the coast and indications of the different fishing grounds occupied. The diagram, we believe, is intended for distribution among the various district fishery officers in Scotland, with the view of

inducing some of them to prepare similar diagrams for 1875 for their own districts. With these, and the observations from twenty sea-thermometers which were presented by the Marquis of Tweeddale, as also of the weather during the coming season, results may be hoped for that will throw some light on the important question of the varying localisation of the fishings.

THE Committee of the forthcoming Geographical Congress at Paris have finished the distribution of the space allotted to the various countries in the *Pavillon de Flore* for exhibition; the geographical order has been adopted in locating the several nations. Russia, being the most northern, has been placed first; but magnificent rooms have been allotted to British exhibitors on the ground-floor. Everything has been done to ensure a splendid display of English science and industry, and great things are expected from the nation which, without any boasting, may be said to have done as much as many others put together to open the world to civilisation. The presidents of the English Committee are the Earl of Derby, Sir H. Rawlinson, and Sir Bartle Frere. Great interest is felt by the Society and the Committee in the Polar Expedition, and models of the two ships, of sledges, boats, &c., would be most particularly popular and very thankfully received.

THE Council of the Senate of Cambridge University upon the Grace which proposed to constitute a Syndicate for the purpose of considering what representations should be made to the Government as to the pecuniary and other relations subsisting between the University and the Colleges, are of opinion that it should be withdrawn; they think, however, that it is advisable to obtain the general opinion of the University on the following points:—1. What additional teachers or appliances for teaching are required in the different departments of University study. 2. How these teachers and appliances may be best supplied, whether by the individual Colleges or by the University, or partly by the one and partly by the other. 3. Whether by any improved organisation the systems of professorial and collegiate teaching may be made more efficient and be brought into closer relations with each other. 4. How the teaching in the University may be organised so as to give the greatest encouragement to the advancement of the several branches of learning. They therefore recommend that a Syndicate be appointed to consider these subjects. The Vice-Chancellor invites discussion of this report on Saturday next, at 2 P.M., in the Arts School.

A SYNDICATE has been appointed to consider what steps (if any) should be taken for establishing a Professorship of Mechanism and Engineering in the University of Cambridge.

The late Prof. Willis, by his will, offered to Cambridge University, for 1,200*l.*, the collections of models, instruments, and tools used by him as Jacksonian Professor. A Syndicate has been appointed to consider the expediency of purchasing the whole or part of the collections.

FOR some time past negotiations have been in progress between Prof. Charles F. Hartt, of Cornell University, and the Government of Brazil, in regard to a complete geological survey of that empire. It is now stated that the preliminaries have been completed, and that Prof. Hartt has been appointed director of the survey. His preparations for this work are ample, as he has made no less than four successive visits to Brazil with reference to the study of its general geology and ethnology. His salary is said to have been fixed at \$10,000 a year. It is also announced that Prof. Caldwell, another member of the faculty of Cornell University, has been appointed to take charge of the agricultural branch of the survey.

IN reference to a note in *Dingler's Polytech. Journal*, mentioned in NATURE, vol. xi. p. 456, there is a second paper in

the valuable serial (2nd January part) on the part played by carbonic oxide gas in smoking. This treatise is by Dr. Vohl, and refutes Dr. Krause's opinion. He says: "It is evident from Dr. Krause's account that he is unaware of the experiments made by Dr. H. Eulenberg and myself as far back as 1871, which proved the presence of carbonic oxide in tobacco smoke. I cannot, however, agree with the idea that the physiological effects of smoking are to be in part or wholly attributed to this gas, as it varies greatly in the quantity in which it is present in smoke. This quantity is never considerable, and the effects in question must rather be ascribed to the volatile organic bases, which form while tobacco is burning. Dr. Krause owns himself that his analytical results are not exact, on account of the method he used in obtaining them; these results cannot therefore give any idea as to the quantity of carbonic oxide generally present in tobacco smoke, as neither the temperature nor the barometrical pressure was noted, nor was any account taken of oxygen and marsh gas."

THE Government has taken up the question of the protection of seals in the Greenland seal fishery; and a Bill has been introduced into Parliament by the Board of Trade, authorising the issue of an Order in Council prohibiting the capture or destruction of any kind of seal between such dates as may be specified in such Order, in any part of the area included between the parallels of 67° and 75° N., and the meridians of 5° E. and 17° W. Such Order is to be made whenever it shall appear that the other States whose subjects and vessels are engaged in the seal fishery shall make similar regulations. The great destruction of seals which has taken place of late years has seriously interfered with the success of the important industry. This year many of the vessels have returned "clean."

M. WALLON, the French Minister for Public Instruction, has visited the Lille Academy and Colleges, and was received with a great display of enthusiasm. He is said to contemplate many improvements in educational establishments in large provincial cities; these are to be tried first in the city where he was born, and which he represents in the National Assembly.

THE Council of the lately-established United Services College, Westward Ho, have resolved to introduce Natural Science into the regular school-work; in fact, to place it on an equal footing with Languages and Mathematics as a means of mental training. They have appointed as master Mr. Herbert Green, F.C.S., M.A., of Queen's College, Oxford, who has had some years' experience at Victoria College, Jersey. A laboratory will be at once fitted up under his supervision, and class-rooms will be added as required.

WITH regard to the statement quoted from Dr. Cleland's book on Animal Physiology (NATURE, vol. xi. p. 504), "that the presence of chlorophyll is as necessary for the production of organic matter in organisms as the presence of protoplasm is necessary for growth," a correspondent points out that fungi seem to be an exception to the rule. He has never seen it stated that Torula, for instance, contains chlorophyll, nor has he ever himself seen chlorophyll in Torula. It is generally agreed, he believes, that fungi do not contain chlorophyll or starch.

DR. JOHN CROUMBIE BROWN, F.L.S., author of a work on the Hydrology of South Africa, is preparing for the press a work which he intends to call "Reboisement en France." It will consist of records of the replanting of the Alps, the Cevennes, and the Pyrenees with trees, herbage, and bush, with a view to arresting and preventing the destructive consequences and effects of torrents, and will embody a *résumé* of Alexandre Surell's "Étude sur les Torrents des Hautes Alpes," with copious extracts.

THE Annual Meeting of the Royal Institution was held on Saturday last. Sixty-four new members were elected in 1874. The following gentlemen were unanimously elected as officers for the ensuing year:—President, the Duke of Northumberland, D.C.L.; Treasurer, George Busk, F.R.C.S., F.R.S.; Secretary, William Spottiswoode, M.A., LL.D., Treas. R.S. The Vice-presidents for the year are the Duke of Devonshire, K.G., Dr. Pole, F.R.S., and Dr. C. W. Siemens, F.R.S.

THE Iron and Steel Institute commenced its meetings yesterday; we hope to be able next week to give some account of the work done.

WE believe that Mr. Disraeli has promised to receive a deputation on the subject of the India Museum after the Whitsuntide holidays.

STEPS are being taken to obtain the assent of the Emperor to a proposal for holding an Imperial German Industrial Exhibition in Berlin in 1878.

MR. STANFORD is about to publish Part I. of "Vestiges of the Molten Globe," by Mr. W. L. Green, Minister of Foreign Affairs to the King of the Sandwich Islands. The work will be concluded in three parts, and will, we believe, contain some curious observations as to the formation of minerals, Mr. Green having had many opportunities of watching the process during his twenty-five years' residence beside the Hawaiian volcanoes.

MR. EDWARD B. AVELING, B.Sc. Lond., has been appointed Lecturer on Comparative Anatomy at the London Hospital Medical College.

MR. J. RAND CAPRON has reprinted from the April number of the *Philosophical Magazine* his paper "On the Comparison of some Tubes and other spectra with the Spectrum of the Aurora."

VINE culture in New South Wales is progressing very rapidly, the number of acres occupied for this purpose being 3,183 in 1873, against 2,568 acres in 1872, and the produce 575,985 gallons against 451,450 gallons. These figures relate only to the growth of grapes for wine-producing purposes, but a considerable area is devoted to the cultivation of the vine for other objects. In Western Australia also, where the soil and climate are eminently favourable to the growth of the grape, this pursuit is becoming more general.

MUCH information on the functions, the form, and the habits of the Octopus may be obtained from a small work by Mr. C. Mitchell, recently published by Messrs. Dean and Son. The structure and economy of the animal are, in it, explained in a particularly lucid and interesting manner, which will lead those who have the opportunity of seeing the Octopus in an aquarium for the first time, to form a far better idea of the somewhat shapeless mass presented to their view, than any amount of time spent in simply inspecting it at a distance. Some anatomical illustrations which are added will also be found very useful to any one who has the opportunity of obtaining specimens for dissection.

THE additions to the Zoological Society's Gardens during the past week include two Pig-tailed Monkeys (*Macacus nemestrinus*) from Java, presented by Mr. A. B. Gordon and Miss H. E. Humphreys; a Patagonian Conure (*Conurus patagonus*) from La Plata, presented by Mrs. Cabry; a Ground Hornbill (*Buceros abyssinicus*) from West Africa, a Concave-casqued Hornbill (*Buceros bicornis*) from India, received in exchange; a Hoffmann's Sloth (*Choloepus hoffmanni*) from Panama, purchased; two White-fronted Lemurs (*Lemur albifrons*), a Hairy Armadillo (*Dasyurus villosus*), and four Upland Geese (*Chloephaga magellanica*), born in the Gardens.